

Preface

Progress in oceanography in the past quarter century has been greatly assisted by the development of undersea technology. The National Undersea Research Program (NURP), within the National Oceanic and Atmospheric Administration (NOAA), provides a unique national service by providing undersea scientists with the tools and expertise they need to work in the undersea environment. We equip scientists with submersibles, remotely operated or autonomous underwater vehicles, mixed gas diving gear, as well as underwater laboratories and observatories. How scientists explore under water and examples of what they have found are captured in this report, which summarizes some of the scientific studies the program has supported over the past several years.

The report is titled the Undersea Research Investment in recognition of the benefits that will result from a greater understanding of the world's oceans, which make up more than 99 percent of the living volume of our planet. In spite of its prevalence, the opportunity to observe what occurs beneath the sea is still relatively rare.

The oceans are still a frontier area. The Mid-Ocean Ridge, a mountain range stretching across the ocean basins, was recognized only in the 1960s. Discovery in the 1980s of vents and seeps surrounded by mineral deposits and exotic life that exist without sunlight revolutionized modern scientific theory about the origin and sustenance of life on Earth. NURP-funded scientists are a part of this advance on the frontier.

Research supported by our program spans the undersea environment from the shoreline to the deep sea, capturing nearly all the scientific disciplines. Our hope is that this report provides readers with a glimpse of what's beneath the sea and the breadth of NURP research. Interviews with scientists, as well as staff members based at NURP's regional centers, highlight recent scientific studies that illustrate the significance of gathering information from the ocean, and the delight and dedication associated with ocean research and discovery.

Beyond the glamour of diving on warm reefs or braving the venting of submerged volcanos in a submersible vehicle, experienced scientists must overcome the many obstacles inherent in Earth's harshest environment. Undersea research requires perseverance. The scientists' reward comes from overcoming these obstacles and helping humans understand and live on the "water planet." This report is dedicated to those researchers who have invested in learning about the ocean for our future benefit and profit.

*Barbara Moore, Director
National Undersea Research Program*



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